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10/570,349	03/03/2006	Kouichi Takei	120446017X00	7124

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EXAMINER	
ETHERIDGE, EMPRESS A	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
10/14/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/570,349	TAKEI ET AL.	
	Examiner	Art Unit	
	Empress Etheridge	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7 and 10-14* is/are pending in the application.

4a) Of the above claim(s) *5,8 and 9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7 and 10-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The Applicants' amendment filed on July 14, 2009 was received. Claims 1-4, 6, 7, 11, and 12-14 are pending. Claims 5, 8, and 9 were cancelled. Claim 1 was amended. Claims 12-14 were added.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on April 14, 2009.

Election/Restrictions

3. Applicant's election without traverse of Group I, claims 1-4 and 6, 7, 10, and 11 in the reply filed on July 14, 2009 is acknowledged.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 12, and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to claim 1, while there is support for a layer of carbon formed on a surface of the graphite particle, there is no support in the original specification for the limitation layer of carbon formed on the surface of each of the graphite particles.

As to claims 12 and 13, while there is support for a layer of carbon formed on a surface of the graphite particle, there is no support in the original specification for the limitations "layer that consists of carbon" or "layer that consists essentially of carbon". In addition, in the instant specification applicants disclose a thermoplastic polymer that will form the carbon layer over the graphite particles (see paragraphs [0035-0036]). Nitrobenzene is included as one of the possible compounds forming the layer of carbon which teaches away from the limitations: "layer that consists of carbon" or "layer that consists essentially of carbon".

Claim Rejections - 35 USC § 103

6. The claim rejections under 35 USC § 103(a) as being unpatentable over Takei et al. (J.P. 2000-203818) in view of Ishii et al. (U.S. Pub. No. 2001/0033822) on claims 1-4, 6, 7,10,11,14 are maintained.

Regarding claims 1 and 14, Takei teaches a negative pole material for a lithium secondary battery (title and paragraph [0002]), which is the equivalent of applicants' non-aqueous electrolyte secondary battery negative electrode material. Takei teaches a flat shaped, non- spherical, non-parallel shape of particles (see paragraph [0021] and claim 5), which is the equivalent of applicants' graphite particles that have a block like structure where a plurality of flat graphite fine particles assemble or bonds non-parallel

with each other. Takei teaches particles have fine pores of 0.4-2.0 cc/g in the range of 0.1-100μm (see paragraph [0012] and claim 5), which is the equivalent of applicants' volume of fine pores in the range of 10 to 10^5 nm in a volume of 40 to 2000 cm^3/kg. Takei teaches a compound carbon particle which has the structure which a graphite grain is covered with amorphous carbon (see paragraph [0011]), which is the equivalent of applicants' layer of carbon formed on a surface of the graphite particle.

Takei fails to explicitly teach the aspect ratio is 5 or less or that the ratio (by weight ratio) of the layer of carbon to the graphite particle is in the range of 0.001 to 0.01.

However, Ishii teaches a graphite particle obtained by assembling or binding together a plurality of flat-shaped particles so that the planes of orientation are not parallel to one another, having a pore volume of the pores having a size falling in a range of 10^2 to 10^6Å is 0.4 to 2.0cc/g per weight of graphite particle, and that the aspect ratio of said graphite particle is 5 or less (see abstract). Ishii also teaches that the use of this graphite particle as negative electrode material provides for excellent rapid charge-discharge characteristics and cycle characteristics (see abstract). Therefore, it would have been obvious to a person having ordinary skill in the art to combine the prior art references by using the graphite particle as described by Ishii as the graphite part of the lithium secondary battery of Takei for the benefit of improved efficiency of the lithium secondary battery.

Also, Ishii teaches a graphite paste (negative electrode) produced by mixing graphite particles with an organic binder such as tar or pitch (carbon) (see paragraphs

[0065]; and [0071]). Ishii teaches that the mixing ratio between the graphite particles and the organic binder is 3 parts by weight of the organic binder (carbon) per 100 parts by weight of graphite particles (see paragraph [0075]). Thus, the ratio (by weight ratio) of the organic binder (carbon) to the graphite particle is 0.03. If the mixing ratio is 1 part by weight organic binder (carbon) per 100 parts by weight of graphite particles (0.01 by weight ratio) these compounds would be expected to have similar properties to one where the organic binder (carbon) is 3 parts by weight per 100 parts by weight of graphite particles (0.03 by weight ratio). It would have been obvious to a person having ordinary skill in the art to optimize this range for the benefit of excellent rapid charge-discharge characteristics and cycle characteristics and to recognize that this slight variation in numbers would not affect the properties of the carbon-graphite mixture. In addition, differences in weight percent will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Furthermore, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (see MPEP § 2144.05).

Regarding claim 2, Takei teaches a mean particle diameter of 28μm (see paragraph [0044]), which is the equivalent of applicants' average particle diameter is

10μm or more and 50μm or less. Takei teaches the specific surface area of the compound carbon particle obtained is 2. $5m^2/g$ and the value is measured in accordance with the BET adsorption method (see paragraph [0044]), which is the equivalent of applicants' specific surface area measured by a BET method is $2.0m^2/g$ or more and $5.0m^2/g$ or less.

Takei fails to explicitly teach the true specific gravity is 2.22 or more, the bulk density is $780kg/m^3$ or more or that in a Raman spectrum analysis with argon laser light of wavelength of 5145Å, an R value expressed by R=I1350/1580 is less than 0.2.

However, these properties are inherent. It is known that if a material is found that is substantially the same as the present material the properties of said material are inherent. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) (see MPEP § 2112.01). "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art

does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977) (see MPEP § 2112.01). "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)) (see MPEP § 2112).

Regarding claim 3, Takei does not specifically teach the viscosity is 0.5Pas or more or 4.0 Pas or less, measured under any specified conditions. However, these properties are inherent considering the material used is substantially the same as the material disclosed in the instant application. See above rationale of claim 2.

Regarding claim 4, Takei does not explicitly teach the bulk density under pressure of 33MPa is 1850kg/m^3 or the rate of variation of the bulk density when the pressure is released is 0.3 or less. However, these properties are inherent considering the material used is substantially the same as the material disclosed in the instant application. See above rationale of claim 2.

Regarding claim 6, Takei teaches a compound carbon particle which has the structure which a graphite grain is covered with amorphous carbon suitable as the negative pole material (see title and paragraphs [0011] and [0013]), which is the

equivalent of applicants' non-aqueous electrolyte secondary battery negative electrode which includes the negative electrode material of claim 1.

Regarding claim 7, Takei teaches a lithium secondary battery having a negative pole material which is a compound carbon particle which has the structure in which a graphite grain is covered with amorphous carbon (see abstract and paragraphs [0011] and [0013]), which is the equivalent of applicants' non-aqueous electrolyte secondary battery having as the negative electrode, the non-aqueous electrolyte secondary battery negative electrode of claim 6.

Regarding claim 10, Takei does not specifically teach the viscosity is 0.5Pas or more or 4.0 Pas or less, measured under any specified conditions. However, these properties are inherent considering the material used is substantially the same as the material disclosed in the instant application. See above rationale of claim 2.

Regarding claim 11, Takei does not explicitly teach the bulk density under pressure of 33MPa is 1850kg/m^3 or the rate of variation of the bulk density when the pressure is released is 0.3 or less. However, these properties are inherent considering the material used is substantially the same as the material disclosed in the instant application. See above rationale of claim 2.

Response to Arguments

4. Applicant's arguments filed July 14, 2009 have been fully considered but they are not persuasive.

Applicant argues:

a) Rejection of claim 1 is moot because claim 1 has been amended. Takei does not teach the pore volume as claimed (claim 1).

b) The teachings of the applied references would not have disclosed or suggested the layer of carbon with the weight ratio of the layer of carbon to a respective graphite particle and wherein the layer consists essentially of or consists of carbon and/or the carbon covers the graphite particles (claims 12-14).

c) The teachings of the applied references would not have disclosed or suggested the layer of carbon with weight ratio claimed, the volume of fine pores, and the features in the remaining dependent claims.

d) The binder of Ishii et al. is not a layer of carbon and because it is used to bond negative electrode material and a current collector it is not for forming a layer of carbon on a surface of the graphite particles (claim 1).

In response to Applicants' arguments please consider the following comments:

a) There is no support for the amendment in the original specification. Therefore, the teachings of the prior art still meet the claimed limitation.

b) Applicant is respectfully referred to paragraph [0012], wherein Takei discloses fine pores of 0.4-2.0 cc/g in the range of 0.1-100 micrometers which reads on the claimed limitation.

c) The limitations "consists of" and "consists essentially of" are not supported in the specification. In addition, Ishii teaches a binder of an organic carbon containing material mixed with the graphite particles (see paragraphs [0065] and

[0075]). This mixing would consequently result in the carbonaceous binder being attached to a surface of the graphite particles. Claim 1 does not include any functional language about the carbon layer. Therefore, the carbon layer as disclosed by Ishii reads on the limitation.

d) The applicant is respectfully referred to paragraphs [0012] and [0044] wherein Takei teaches the pore size, mean particle diameter (average particle diameter), and specific surface area claimed. Takei fails to disclose some of the other features claimed however, it is the position of the examiner that these properties are inherent. It is known that if a material is found that is substantially the same as the present material the properties of said material are inherent. In addition, Ishii also teaches graphite covered with a carbon layer and discloses a weight ratio that is so close to the claimed weight ratio that it is the position of the examiner that the difference would not change its properties (see paragraph [0075]). Therefore, at minimum the combined references do suggest the claimed invention.

e) See previous discussion (c).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Empress Etheridge whose telephone number is (571)270-7892. The examiner can normally be reached on Monday- Friday 8:30-5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. E./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795